



New distribution records of *Chaltenobatrachus grandisonae* (Anura: Batrachylidae) in Patagonia, Chile

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Abstract: *Chaltenobatrachus grandisonae* was first collected in Puerto Edén, Wellington Island, Magallanes Region, Chile, where the species has never been found again. Subsequently Basso *et al.* (2011) found it in two new localities in Lago del Desierto and Lago Nansen, Santa Cruz province, southern Patagonia, Argentina. Recently Cisternas *et al.* (2013) reported its presence in Laguna Caiquenes, Aysén Region, Chile. Our results provide distribution data between the northern and southern locations in Chile, and we confirm the presence of the species in Chilean Patagonia.

Key words: *Chaltenobatrachus*, distribution, Patagonia, Chile

Chaltenobatrachus grandisonae (Lynch, 1975) is a poorly known species, and for many years the taxonomic status of this frog was confused. It was first collected during December 1958 at Puerto Eden, Wellington Island, Chile, by the Royal Society Expedition to South Chile and deposited at the British Museum (Natural History) and described as a member of the genus *Telmatobius* (Lynch 1975). It was later reassigned to the genus *Atelognathus* based on morphological characters (Lynch 1978). However, Basso *et al.* (2011) placed it into the new genus *Chaltenobatrachus* Basso, Úbeda, Bunge & Martinazzo, 2011. The genus is monotypic and the sister taxon of the genus *Atelognathus* Lynch, 1978, and is known only from southern Patagonia.

Chaltenobatrachus grandisonae has been found in the localities of Lago del Desierto (49°04'41" S, 072°54'17" W) and Lago Nansen (48°05'00" S, 072°25'00" W) in Argentine southern Patagonia, and in Chile at Puerto Edén, Isla Wellington (49°10'00" S, 074°28'00" W) (Lynch 1975; Basso *et al.* 2011) and Laguna Caiquenes

(47°49'58" S, 073°18'16" W) (Cisternas *et al.* 2013) (Figure 1). The species is associated with *Nothofagus* forest, in both temporary and permanent pools. Basso *et al.* (2011) examined different larval states, indicating that the larvae have a prolonged development and overwinter in water. Cisternas *et al.* (2013) observed that the eggs are deposited in temporary ponds in areas of forest regeneration.

Field observations were performed during spring-summer season of 2007–2010 in Chilean Patagonia. We surveyed both aquatic and terrestrial habitat adjacent to streams. Animals were identified as *C. grandisonae* by morphological characters such as uniform bright green dorsal coloration, with brown to reddish warts, thin dorsal skin, orange iris, tympanum absent and fingers with evident inter-digital webbing (Basso *et al.* 2011).

The specimens were euthanized with 1% benzocaine and fixed in 10% formalin for subsequent preservation in 70% ethanol. We recorded sex and anatomic diagnostic characters immediately after euthanasia (Table 1). We found specimens of *C. grandisonae* at three localities (Figure 1). The first of these was in Laguna Caiquenes (Figure 2a and 2b), recently reported by Cisternas *et al.* (2013). The other two are new localities for this species: Lago Balboa (47°53'00" S, 073°06'00" W) (Figure 2c and 2d), and near Villa O'Higgins (48°22'00" S, 072°29'00" W) (Figure 2e and 2f). Specimens were deposited in the collection of Museo de Zoología de la Universidad de Concepción (MZUC 35391; 36565; 32533; 33710; 33722; 33762; 32980). Collections were made under permit from the Servicio Agrícola y Ganadero (SAG), resolutions 6494 / 2006 and 6491 / 2007.

The habitat of *C. grandisonae* is wet forest of *Nothofagus*, dominated by lengas (*N. pumilio*) and coigües (*N. betuloides*), with bogs of *Poaceae* and *Cyperaceae*. The specimens were found on the edges of

Table 1. Morphological measurements of *Chaltenobatrachus grandisonae* (mm.). The specimens from new localities are grouped by sex and are compared with the data from holotype [BM (1962.629)] according to Lynch (1975) and Basso et al. (2011).

Body measure (mm)	Holotype (Lynch 1975)	<i>C. grandisonae</i> Basso et al. 2011	<i>C. grandisonae</i> n = 9 males	<i>C. grandisonae</i> n = 7 females
Snout-Vent length	32.9	37.13±2.39	35.62 ±3.15	32.32±6.10
Head width	10.8	11.34±0.62	11.03 ±0.66	10.25±1.86
Head height	10.6	11.27±0.62	11.78 ±0.91	10.71±1.98
Femur length	14.0	16.09±1.44	16.18 ±2.33	15.38±3.88
Foot length		23.69±1.23	20.34 ±3.05	20.09±3.84
Upper eyelid width	3.2	3.00±0.49	2.65 ±0.61	2.28±0.64
Interorbital distance	2.1	2.99±0.32	3.09 ±0.43	2.87±0.27
Eye diameter	3.7	3.51±0.16	3.53 ±0.58	3.20±0.63
Nostril-eye distance	2.5	2.53±0.21	2.73 ±0.36	2.60±0.57

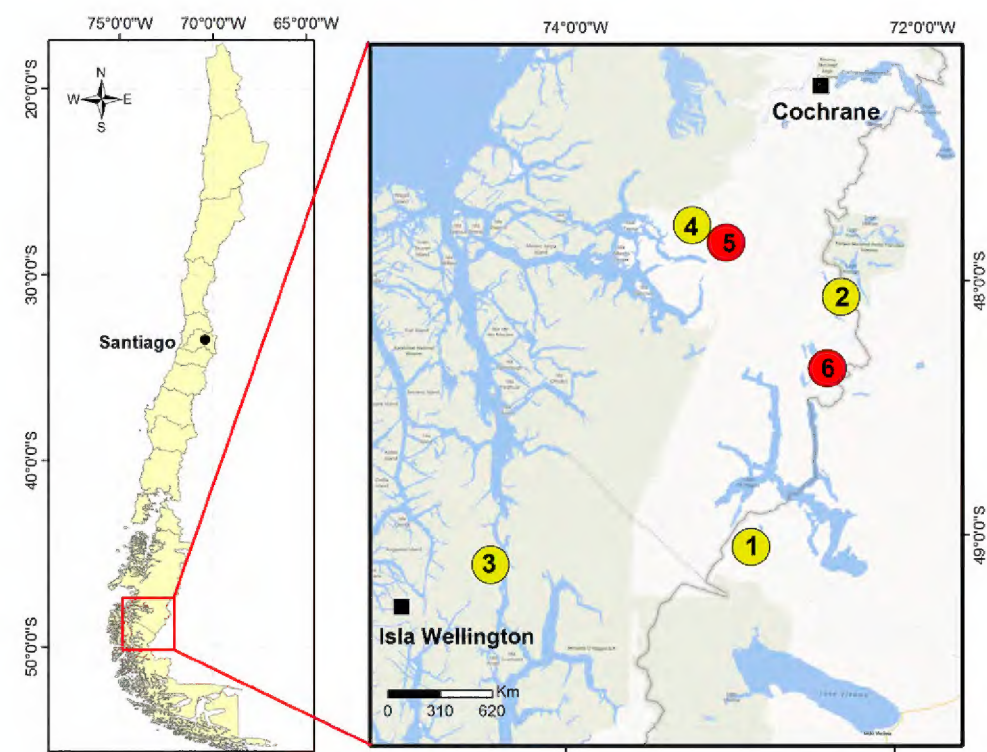


Figure 1. Distribution of *Chaltenobatrachus grandisonae*. Known localities: ❶ Laguna del Desierto; ❷ Lago Nansen; ❸ Puerto Edén, Isla Wellington; ❹ Laguna Caiquenes. New localities: ❺ Lago Balboa; ❻ Villa O'Higgins.

ponds, hidden under the vegetation or rocks. In these localities, *C. grandisonae* cohabits with other anurans: *Alsodes* sp., *Batrachyla antartandica* Barrio, 1967; *Eupsophus calcaratus* (Günther, 1881) and *Nannophryne variegata* Günther, 1870. In Chile this species was listed as “Rare” (Reglamento de la Ley de Caza, Chile 1998), but our data confirm that *Chaltenobatrachus grandisonae* occurs in remote, inaccessible Patagonian territories, including natural protected areas. The information given here shows new records of the presence *C. grandisonae* in Chile and therefore it is possible that it is not threatened. On the other hand, the lack of knowledge of its natural history and population biology does not allow us to accurately assess its conservation status, so we recommend maintaining it as Data Deficient, “in view of continuing uncertainties as to its taxonomic status, extent of occurrence and ecological requirements” (IUCN 2014).

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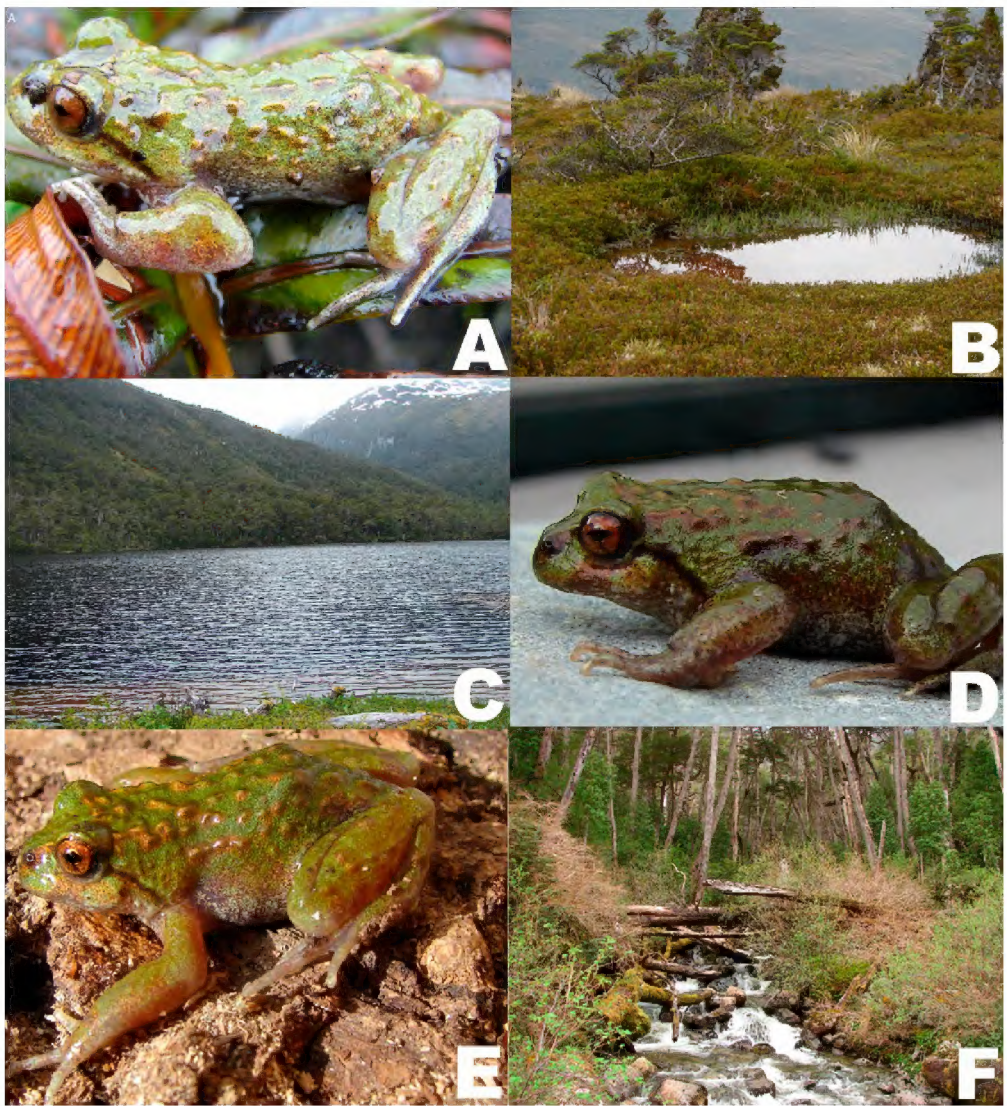


Figure 2. Specimens and habitat of *C. grandisonae* from the Aysén region in Chile. (A) *C. grandisonae* from Lago Balboa, (B) Temporary pond in open area, (C) Laguna Caiquenes, (D) *C. grandisonae* from Laguna Caiquenes, (E) *C. grandisonae* from Villa O'Higgins, (F) Stream where larvae and adults in breeding season are found.

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LITERATURE CITED

Basso, N.G., C.A. Úbeda, M.M. Bunge and L.B. Martinazzo. 2011. A new genus of neobatrachian frog from southern Patagonian forests, Argentina and Chile. *Zootaxa* 3002: 31–44. <http://www.mapress.com/zootaxa/2011/f/zto3002p044.pdf>

Cisternas, J., C. Correa, N. Velasquez and M. Penna 2013. Reproductive features of *Chaltenobatrachus grandisonae* (Anura: Batrachylidae) within a protected área in Patagonia, Chile. *Revista Chilena de Historia Natural* 86: 365–368. doi: [10.4067/S0716-078X2013000300013](https://doi.org/10.4067/S0716-078X2013000300013)

IUCN. 2014. IUCN Red List of threatened species. Version 2010.4.

- Electronic database accessed at <http://www.iucnredlist.org>, 2 June 2014.
- Lynch, J.D. 1975. A new chilean frog of the extra-Andean assemblage of *Telmatobius* (Amphibia: Leptodactylidae). Southern California Academy of Sciences Bulletin 74(3): 160–161. <http://biostor.org/reference/101998>
- Lynch, J.D. 1978. A re-assessment of the Telmatobiine leptodactylid frogs of Patagonia. Occasional Papers of the Museum of Natural History the University of Kansas 72(1): 1–57. <http://biodiversitylibrary.org/page/4138180>

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